

## REMARKS

This paper is filed in response to a final Office action dated January 22, 2010. In the Office action, claims 2-5 are objected to for informalities; claims 2-12 are rejected (1) under 35 U.S.C. 101 as being directed to non-statutory subject matter; and (2) under 35 U.S.C. 102 as being anticipated by U.S. Patent No. 5,930,154 (“Thalhammer-Reyero”). In response, Applicant has amended claims 2-5 to correct the informalities. Further, Applicant has amended independent claim 12 to overcome the 101 and 102 rejections. Support for this amendment can be found in paragraph [0053] of the published application. No new matter is added. In view of the amendments and remarks submitted herewith, reconsideration and withdrawal of the aforementioned objections and rejections are respectfully requested.

## Objections

Claims 2-5 are objected to for informalities. By way of the aforementioned amendments, the informalities are corrected exactly as suggested by the Examiner. As a result, the objections are overcome and should be withdrawn.

## 35 U.S.C. 101

Turning to claim rejections, claims 2-12 are rejected as being directed to non-patentable subject matter, primarily under the Federal Circuit’s decisions in *In re Bilski* (holding that claims reciting a “process” must either be tied to a particular machine or transform underlying subject matter to a different state or thing). However, the Supreme Court’s recent decision in *Bilski* indicated that the machine-or-transformation test should not be the sole test for patent-eligibility of processes. Rather, it provides a useful and important clue, an investigative tool, for determining whether a claimed process is directed to

patentable subject matter. See USPTO Commissioner's Memorandum dated June 28, 2010.

According to the Memorandum, the determination of patent-eligibility of a process includes the following steps:

If a claimed method meets the machine-or-transformation test, the method is likely patent-eligible under section 101 unless there is a clear indication that the method is directed to an abstract idea. If a claimed method does not meet the machine-or-transformation test, the examiner should reject the claim under section 101 unless there is a clear indication that the method is not directed to an abstract idea. If a claim is rejected under section 101 on the basis that it is drawn to an abstract idea, the applicant then has the opportunity to explain why the claimed method is not drawn to an abstract idea.

Here, amended independent claim 12 explicitly refers to a first step of modeling various biological entities that form part of the biological system in a time-space-shape framework, which allows a systematic description of the functioning of the entities (e.g. cell or molecule). Once the biological system is modeled, the claimed invention provides a second step of progressively determining, for each biological functional entity, if a morphological transformation is produced as a function of the space-time context, as the interactions of the biological functional entities go along. By recursively performing the second step, the behavior of the biological functional entities over time can be predicted, in particular the morphological changes that may modify the functional properties.

As explained in our previous response, data representing the tangible biological entity are transformed into a different state in the claimed method, thereby simulating a transformation of the entities from one state to another. Thus, the claimed method clearly meets the machine-or-transformation test (requiring transformation into a different state or thing). The Examiner, however, appears to have narrowly interpreted the transformation test as requiring transformation into a different thing (instead of different state or thing).

Therefore, the Examiner rejected Applicant's arguments because "data remains data" after the recited modification. Applicant submits that this is a misapplication of the machine-or-transformation test and therefore the 101 rejection is overcome and should be withdrawn.

Even assuming, *arguendo*, that the claimed method fails the machine-or-transformation test, Applicant can still overcome the 101 rejection by showing that the claimed method is not drawn to an abstract idea. Here, the claimed method relates to data representing a biological system, in which values are assigned to shape, time, and space occurrences so as to represent one or more tangible biological functional entities of the biological system in order to simulate a transformation of the entities from one state to another. Further, the effects of this transformation are represented as a trajectory in the (shape, time, space) frame of reference. As a result, the claimed method is not drawn to an abstract idea but instead involves modeling and simulation of an active biological system. Thus, the 101 rejection is overcome and should be withdrawn for this reason as well.

### Anticipation

Claims 2-12 are rejected as being allegedly anticipated by Thalhammer-Reyero. Under MPEP 2131, "[a] claim is anticipated only if each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Thus, to make a proper anticipation rejection, the Examiner needs to establish that Thalhammer-Reyero teaches each and every element of the rejected claims.

Here, independent claim 12, upon which claims 2-11 depends, require the step of "representing the behavior of the biological system over time by the trajectory of the states of each data represented biological functional entity in a frame of reference consisting of shape,

time, and space," which is not disclosed in Thalhammer-Reyero. Instead, Thalhammer-Reyero's model is established under a frame of identification-space-time-interaction (col. 4, lines 54-60). Thalhammer-Reyero's model does not include a morphological occurrence, much less a morphological transformation representing the way in which a constituent that represents the persistent properties of a functional biological entity behaves as a function of the space-time context. In other words, because Thalhammer-Reyero does not disclose such morphological transformations, Thalhammer-Reyero cannot disclose the step of determining if such morphological transformations of the functional biological entities occur, as recited in amended independent claim 12.

In the Response to Argument section, the Examiner cites to several sections of Thalhammer-Reyero but none of those sections explicitly discloses that Thalhammer-Reyero's model includes a shape parameter. Nor does the Examiner assert or suggest that this deficiency can be cured by inherency. As a result, the Examiner fails to show that Thalhammer-Reyero explicitly or inherently discloses each and every element of the rejected claim and therefore the anticipation rejection is improper and should be withdrawn.

In light of all the foregoing, Applicant respectfully submits that each of the currently pending claims is in a condition for allowance and respectfully solicits same. If a telephone call would expedite prosecution of the subject application, the Examiner is invited to call the undersigned agent.

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Respectfully submitted,

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